

REMARKS/ARGUMENTS

In the pending Office Action, designated "Final", claims 1-16 and 20-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2004/0044744 to Grosner in view of U.S. Patent No. 6,088,450 to Davis (claims 17-19 were canceled previously). In this Amendment After Final, which is being filed with a Request for Continued Examination (RCE), claims 1-14, 16, and 20-22 are canceled, and claim 15 is amended; new claims 23-33 are presented, including new independent claim 23 to a storage system and new independent claim 29 to an access control management method. The dependency of claim 15 has been changed to depend from claim 29 rather than canceled claim 10. The new claims are supported by the specification as filed; no new matter has been added. Entry of the amendments, in accordance with the filing of the accompanying RCE, and reconsideration of the application as amended are requested.

The Claims

The invention relates to processing commands from a host computer for requesting access to a connected storage apparatus. The specification notes that, in storage systems, access can be managed based on MAC address information of a requesting host computer so that only authorized MAC addresses are granted access. Difficulties arise when a router is interposed between the host computer and a storage apparatus, because the MAC address of the router may be substituted into the request message sent to the storage apparatus, in accordance with network protocols (see, for example, the specification at page 4). Such difficulties may arise, for example, in the case of the iSCSI (Internet SCSI) technology.

As recited in the independent claims (claims 23 and 29), the application is directed to a method and an apparatus for performing access management operations involving first, second, and third determinations. The operations of method claim 29 include:

- receiving an iSCSI login request transmitted from the host computer;
- determining a first determination as to whether or not a source address included in an IP header of the iSCSI login request is an IP address in the same segment as a port of the storage apparatus;

- obtaining a MAC address assigned to the port of the host computer when the source address included in the IP header is not an IP address in the same network as the port of the storage apparatus as a result of the first determination;
- determining a second determination as to whether or not the MAC address has been cataloged in an access management table that defines the MAC addresses identifying the host computer;
- approving an access by said iSCSI login request from the host computer to the storage apparatus when the MAC address has been cataloged in the access management table as a result of said second determination;
- determining a third determination as to whether or not a logical unit (LU) specified by the command has been cataloged in the access management table as the LU associated with the source IP address of a frame including the command;
- performing said second determination and said third determination in accordance with a source MAC address in the frame of iSCSI login request sent from said host computer and said access management table when the source IP address of the iSCSI login request is in the same segment as the port of its storage apparatus according to said first determination; and
- accessing to the LU to process the command when said LU has been cataloged in the access management tables as a result of the third determination.

Claim 23 is an apparatus claim with analogous features to those recited above.

Thus, the new independent claims are directed to three different determinations in processing an access request. The first determination involves determining whether or not a source address included in an IP header of the iSCSI login request is an IP address in the same segment as a port of the storage apparatus. If the first determination indicates the source address is not in the same segment as the storage apparatus, then a MAC address is obtained. The second determination involves determining whether or not the MAC address has been cataloged in an access management table that defines the MAC addresses identifying the host computer. If the second determination indicates the MAC address has been cataloged, then access by the iSCSI request is approved. Otherwise, the third determination indicates whether or not a logical unit (LU) specified by the command has been cataloged in the access management table as the LU associated with the source IP address of a frame including the command, so that access is permitted when the third determination indicates that the LU has been cataloged in the access

management table. Moreover, the second and third determinations are performed in accordance with a source MAC address in the frame of iSCSI login request sent from said host computer and said access management table when the source IP address of the iSCSI login request is in the same segment as the port of its storage apparatus according to said first determination.

It is submitted that the new independent claims, both of which recite the features described above, are patentable over all of the cited references.

The Cited References to Grosner and Davis

In the Office Action, the claims were rejected as being unpatentable over Grosner in view of Davis. The rejected independent claims (1, 10, and 22) have been cancelled, rendering their rejection moot. As noted above, the replacement independent claims (claims 23 and 29) are patentable over the references.

As noted at Grosner paragraph [0074], Grosner describes a storage switch device that interconnects storage devices and client devices. The Grosner device is installed in a storage network between data storage and enterprise networks (see paragraph [0092] of Grosner).

The Office Action acknowledged that Grosner does not show "first determination means for determining whether or not a frame of a login request includes second information on identification of the host computer," and cited Davis for showing such features. The new independent claims, however, now recite a first determination of whether a source address in an IP header of an iSCSI login request is an IP address in the same segment as a port of the storage apparatus. This "first determination" is supported in the specification. See, for example, page 23, lines 7-13 regarding step 1110 of Fig. 6. Grosner fails to show this "first determination" feature.

The Office Action equated the password in Davis with the "first information", which is no longer recited in the claims, and asserted that it would be obvious to combine the challenge-response protocol of Davis with the security device authentication process of Grosner. Davis describes a wireless authentication system to control access to a computer by use of a special token device that must be in the possession of an authorized user who is located

physically close to the computer, to enable periodic challenge/response messages between the computer and the special token device (see Davis at col. 1, lines 24-28 and col. 2, lines 38-49).

Applicant again asserts that there is no reason to combine the two disparate devices of Grosner and Davis. Grosner is a security device that is located in network infrastructure to manage access between client devices and network storage devices, whereas Davis uses a special token device (i.e., a portable physical unit, such as a fob) to control access to a single desktop computer such that the token must be in the possession of an authorized user who is in physical proximity to the computer being accessed. Anyone who has physical possession of the Davis token will be granted access to the desktop computer. In contrast, Grosner manages access in accordance with network (software) implementations.

Even if Davis could somehow be combined with Grosner, and even if the challenge-response protocol of Davis could be combined with Grosner, the two would not provide the features of the claims including the three determinations above. For example, the combination would not provide the feature of receiving an iSCSI login request transmitted from the host computer (see box **1100** of Fig. 6 and page 23, lines 7-9 of the specification). It should also be apparent that Grosner and Davis would not provide the "first determination" feature of determining whether or not a source address in an IP header of an iSCSI login request is an IP address in the same segment as a port of the storage apparatus (see, for example, box **1110** of Fig. 6 and page 23, lines 9-13). Neither reference describes such processing. Thus, the proposed combination of Grosner and Davis is lacking at least one of the claimed features and therefore the combination does not render the independent claims obvious.

Neither Grosner nor Davis, nor any other combination of the cited references, provides the other claimed features of claims 23 and 29. For example, the independent claims recite that a MAC address assigned to the port of the host computer is obtained if the source address in the IP header of the iSCSI login request is not in the same segment as a port of the storage apparatus. This feature is supported by, e.g., box **1120**, **1130** of Fig. 6 and page 23, lines 14-24 of the specification. The second determination of the claims relates to whether or not the MAC address has been cataloged in an access management table that defines the MAC address

identifying the host computer. See, e.g., box **1150** of Fig. 6 and page 24, lines 8-11. In another feature of the new independent claims, the host computer request for access via the iSCSI login request is approved when the second determination indicates that the MAC address has been cataloged in the access management table. See, e.g., box **1160** of Fig. 6 and page 24, lines 11-18. The third determination relates to whether or not an LU specified by the command from the host computer has been cataloged in the access management table as the LU associated with the source IP address of a frame including the command. See, e.g., box **1420** of Fig. 7 and box **1320** of Fig. 8, and the specification at page 25, lines 2-8 and page 26, last four lines of the page. If the third determination indicates that the LU has been cataloged in the access management table, the host computer command for access is processed. See, e.g., box **1430** of Fig. 7 and box **1330** of Fig. 8, and the specification at page 25, lines 8-14 and page 26, lines 1-6. An additional feature of the independent claims is that the second and third determinations are performed in accordance with a source MAC address in the frame of iSCSI login request sent from said host computer and said access management table when the source IP address of the iSCSI login request is in the same segment as the port of its storage apparatus according to said first determination. See, e.g., box **1110** and **1150** of Fig. 6 and box **1420** of Fig. 7 and box **1320** of Fig. 8 and accompanying text.

Neither Grosman nor Davis shows all of these features of the independent claims. None of the other references of record make up for such deficiencies, and therefore no combination of references can provide these claimed features. Therefore, claims 23 and 29 are patentable.

The dependent claims (15, 24-28, and 30-33) are patentable for at least the reasons above.

CONCLUSION

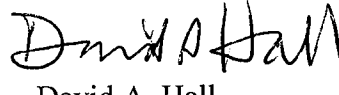
In view of the foregoing, Applicants believe all claims now pending in this Application (as amended by this Amendment After Final and the accompanying RCE) are in condition for allowance and an action to that end is respectfully requested.

Appl. No. 10/765,289
Amdt. dated November 29, 2007
Amendment under 37 CFR 1.116 Expedited Procedure
Examining Group 2135

PATENT

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6100.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David A. Hall". The signature is fluid and cursive, with the first name "David" and last name "Hall" being clearly distinguishable.

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